ABSTRACT OF THE DISCLOSURE

[00123] A method maintains a multidimensional histogram for a data array having a data array size, the method having a processing time substantially less than proportional to the data array size. The method involves (104) receiving a data update that indicates a change to data in the data array; (106) with the data update, updating an intermediate data structure having a size substantially smaller than the data array size, so that the updated intermediate data structure remains an at-least-approximate representation of the data in the data array as changed by the data update; (110) collecting a number of substantially-largest-coefficient linear combinations of then-current data, the number being small compared with the data array size; and (114) forming the multidimensional histogram as a histogram to an intermediate data array re synthesized from the collected linear combinations. Another method prepares a multidimensional histogram for a data array, the data array characterized by a data array size and including data, the method having an execution time proportional to the data array size and using an amount of storage space substantially smaller than the data array size. The method involves (802) receiving data from the data array; (802) transforming the data into linear combinations of data items, or of approximations of the linear combinations of data items; (804) collecting a moderate number of substantially-largest-coefficient linear combinations of the data; and (806) forming the multidimensional histogram as a histogram to the collected linear combinations.